

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
8 April 2004 (08.04.2004)

PCT

(10) International Publication Number  
**WO 2004/028291 A2**

(51) International Patent Classification<sup>7</sup>: **A46B**

(21) International Application Number:  
PCT/US2003/030168

(22) International Filing Date:  
23 September 2003 (23.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/413,128 24 September 2002 (24.09.2002) US

(71) Applicant: **COLGATE-PALMOLIVE COMPANY**  
[US/US]; 300 Park Avenue, New York, NY 10022 (US).

(72) Inventors: **KEMP, James**; 14 Staudt Court, Somerset, NJ  
08873 (US). **SPROSTA, Al**; 1004 Redspire Drive, Union,

NJ 07083 (US). **TRAFICANT, Brett**; 28 Coldevin Road,  
Clark, NJ 07066 (US). **DAI, Tau**; 45 Foley Avenue, Edison,  
NJ 08820 (US). **JIMENEZ, Eduardo**; 21 Manor Drive,  
Manalapan, NJ 07726 (US). **PAK, Nancy, Won, Mee**; 215  
West 84th Street #424, New York, NY 10024 (US).

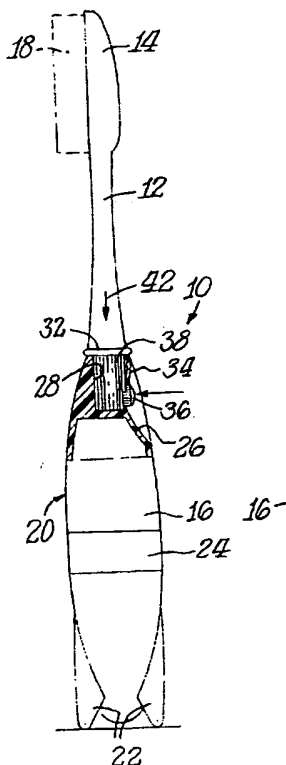
(74) Agent: **GOLDFINE, Henry, S.**; Colgate-Palmolive  
Company, 909 River Road, P.O. Box 1343, Piscataway, NJ  
08855-1343 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: TOOTHBRUSH ASSEMBLY



(57) Abstract: A child's toothbrush includes a handle in the form of a toy, such as a rocket ship or a vehicle, and wherein a toothbrush head and neck easily connects and disconnects from the handle. The handle may also contain a hollow compartment for holding stationary a removable vehicle, figurine, other toy or sundry product therein.

WO 2004/028291 A2



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- without international search report and to be republished upon receipt of that report

## TOOTHBRUSH ASSEMBLY

5

**BACKGROUND OF THE INVENTION****A. Field of the Invention**

The present invention relates generally to toothbrushes, and, more particularly, to a toothbrush assembly having a toy-shaped handle with an interchangeable, easily detachable head and neck, the toy-shaped handle also having a compartment for holding stationary a removable separate figurine or toy.

**B. Description of the Related Art**

Various types of toothbrushes having object-shaped handles are generally known in the art, and are designed to appeal to children to encourage them to brush their teeth for enhanced oral health. Examples of such toothbrushes that appeal to children include U.S. Design Patent Nos. 237,659, 443,765, 452,381, and 452,382 which disclose toothbrushes having handles shaped like vehicles (e.g., race cars, rocket ships, jets, etc.). U.S. Design Patent Nos. 329,948, 347,146, 347,147, 347,148, 363,166, 402,119, 434,907, and 452,380, and U.S. Patent No. 6,026,532 disclose toothbrushes having handles shaped like animals. Toothbrush handles having other shapes are also possible, as seen in U.S. Design Patent Nos. 113,744, 155,668, 175,198, and 209,574.

In the above-mentioned toothbrush designs, it appears that the object-shaped handles are not removable from the toothbrush head, or interchangeable with other object-shaped handles. Thus, the appeal of such designs is necessarily limited.

The toothbrush art discloses toothbrushes with detachable handles. For example, U.S.

Patent No. 3,072,938 relates to a power-operated toothbrush wherein the toothbrush is detachably secured to a power driven member. This is accomplished by a detachable coupling structure that includes a resilient cantilever member at the end of the toothbrush. The cantilever member has an upwardly extending projection for fitting in one of two oppositely disposed openings and in the socket portion of the power driven member. The cantilever member has an upwardly extending button on its upper portion. In order to release the toothbrush, the button would be depressed to disengage the projection from its respective opening. However, instead of using the same release button as the locking member, U.S. Patent No. 3,072,938 discloses having a separate release member and locking member. Further, in U.S. Patent No. 3,072,938 the toothbrush itself is being detachably coupled to a power driven member, instead of coupling the neck of the toothbrush to an ornamental or decorative handle.

U.S. Patent No. 4,780,924 discloses a toothbrush with a removable brush head. The coupling structure includes a U-shaped body extending from the head. The body has a spring finger with a tooth. A key is mounted at the end of the body. The handle portion is illustrated in Fig. 5 and includes a cavity having surfaces which compliment the surfaces of the U-shaped body, including a ramp upon which the tooth would slide until the tooth becomes locked in place, as shown in Fig. 5d. In order to detach the head, an additional structural member such as a second male latch portion is used wherein the key would be inserted into the channel to deflect the tooth inwardly out of its locking condition. Unfortunately, this arrangement requires a separate unlatching member, and the reference fails to disclose a latch button that is located at the surface so that it can be finger manipulated.

U.S. Patent No. 5,027,463 discloses a power-driven toothbrush having a combination electric motor module and handle, and a connectable toothbrush head. The free end of the toothbrush head, away from the end with toothbrush bristles, has a pair of coupling notches

therein for coupling connection to the toothbrush handle. The reference does not disclose if the toothbrush head is detachably connected to the handle.

Other references which appear to disclose toothbrushes with detachable handles include U.S. Design Patent Nos. 336,368, 378,250, and 423,224.

5 The closest the toothbrush art comes to offering toy-based handles with detachable toothbrush heads may be found in U.S. Patent Nos. 5,353,464, 5,774,921, and 6,015,328. U.S. Patent No. 5,353,464 discloses a toothbrush having a handle in the general form of an animal and a detachable toothbrush head. However, the toothbrush head fits into a recess or socket of the handle through a frictional sliding arrangement, and there is no mention of  
10 providing a latch button that is located at the surface so that it can be finger manipulated.

U.S. Patent No. 5,774,921 discloses a toothbrush having a handle in the general form of an animal with a mounted toothbrush head. The mounting is accomplished by inserting nipples which deform during insertion of the handle into a slot and then snap into detents, as shown in Fig. 6. The reference does not disclose a latch button that is located at the surface so  
15 that it can be finger manipulated.

U.S. Patent No. 6,015,328 discloses a toothbrush detachably mounted to a toy handle. The toothbrush is removably mounted on the toy handle by a "twist-and-lock" mechanism, and there is no mention of providing a latch button that is located at the surface so that it can be finger manipulated.

20 Many children's toys are handheld, and, especially with vehicle-type handheld toys, contain a compartment with a lid for retaining figurines, such as toy people, therein. For example, the LEGO® Company of Denmark offers several vehicle type handheld toys that have a compartment with a transparent lid to retain a LEGO® figurine, such as a driver, within the vehicle. Such handheld toys are not known to have been used as toothbrush  
25 handles.

The closest the toothbrush art comes to offering toy-based handles with compartments for retaining additional figurines may be found in **U.S. Patent Nos. 5,353,464 and 5,590,436.**

U.S. Patent No. 5,353,464 discloses a toothbrush having a handle in the general form of an animal. If desired, the handle can contain a hollowed-out compartment for storage of a detachably/attachable toothbrush head. The compartment can be fitted with a suitable cover, plug, or lid to encase the entire toothbrush head within the handle. However, the compartment of U.S. Patent No. 5,353,464 is adapted to retain only the detachable toothbrush head, and there is no mention of providing a figurine within the handle.

U.S. Patent No. 5,590,436 discloses a toothbrush having a handle that carries a figurine formed separately from but attached to the handle. The figurine can be attached directly to the handle of the toothbrush or can be attached first to a carrier which is then attached to the handle. The toothbrush handle of U.S. Patent No. 5,590,436 does not have a compartment with a cover or lid for retaining the figurine.

Although not part of the toothbrush art, **U.S. Patent No. 5,713,664** discloses a beverage stirrer having a pop out item such as a figurine, logo, or product replica. The pop out item can be mounted to an end of a sliding mechanism and can be configured to extend out of an open end of a casing as the beverage is stirred. Unfortunately, U.S. Patent No. 5,713,664 fails to suggest that such a pop out item configuration can be used for a toothbrush handle.

Furthermore, none of the related art appears to disclose a toothbrush handle having a compartment for retaining a figurine, wherein the handle prevents the figurine from moving within the compartment and provides a display case for the figurine.

Thus, there is a need in the art to appeal to children with a toy-shaped toothbrush handle and a toothbrush head detachably connected to the handle with a latch button that is located at the surface so that it can be finger manipulated, wherein the handle can function as

a toy with or without a detachable toothbrush head to encourage children to brush their teeth.

There is also a need in the art to appeal to children with a toy-shaped toothbrush handle having a compartment for removably storing a figurine or other child's toy therein, wherein the handle can function as a toy with or without a detachable toothbrush head to encourage children to brush their teeth, and wherein the handle prevents the figurine from moving within the compartment and provides a display case for the figurine. Prevention of the figurine from moving within the handle avoids potential damage to the figurine and distraction (due to the movement or rattling of the figurine within the handle) during teeth cleaning.

### SUMMARY OF THE INVENTION

The present invention solves the problems of the related art by providing a toothbrush having a head and neck which may be detachably connected to a toy-shaped handle, such as a rocket or vehicle or figurine. This involves providing the neck with a spring arm extension having a push button located at and extending outwardly from the tip of the spring arm. The spring arm is generally located at the top of a U-shaped or channel-shaped insert. The handle fits around the U-shaped insert and has a recess. An aperture extends through the recessed portion to receive the push button of the spring arm. When the handle and neck are snapped together, the push button moves outwardly through the recess aperture to couple the handle and neck together. In order to detach the handle, the push button would simply be pushed inwardly until it is free of the recess aperture.

None of the related art discussed above discloses such a coupling mechanism wherein the toothbrush head and neck are detachably mounted to a toy-shaped or other ornamental-shaped handle.

The present invention further solves the problems of the related art by providing a

toothbrush having a head and neck which may be detachably connected to a toy-shaped handle, such as a rocket or vehicle or figurine. The handle includes a compartment for removably storing a separate vehicle, figurine, other toy or sundry product, such as candy or a miniature tube of toothpaste therein. The handle is preferably a handheld toy design that functions as a toy whether or not detached from the toothbrush head. The inventors of the present invention have found that such handheld toy designs, containing a compartment with an additional toy or sundry product therein, makes an ideal toothbrush handle which offers a fun and exciting way for children to brush their teeth. Such excitement motivates children to brush their teeth often, to set in place lifelong habits of good oral hygiene.

In various practices of this embodiment of the present invention, the toothbrush handle takes the form of a rocket ship having a compartment that retains a figurine, such as an action figure like a LEGO® figurine, stationary therein. This prevents the figurine from being damaged or moving within handle, potentially distracting children during teeth cleaning. Preferably, the handle includes two sections that interconnect and disconnect easily, and, when connected, define the hollow compartment of the handle. When the two sections of the handle are separated, the figurine may be easily removed from the handle, so that a child may play with the figurine. The handle may also be transparent so that the figurine may be viewed, stored, and displayed within the rocket ship-shaped handle.

In still another aspect of this embodiment of the present invention, the toothbrush handle may be a more conventional toothbrush shape, not the shape of a toy, but still acts as a storage and display case for the figurine contained in a compartment provided therein. An entirely or partially transparent or translucent handle or an opaque handle may be provided to enable the figurine to be displayed, and may preferably be opened and closed, or removed and replaced so that the figurine may be removed and stored in the handle compartment. Again, the compartment retains the figurine stationary within the handle.



Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description. It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention, as claimed.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention, and wherein:

Fig. 1 is a front elevational view of a toothbrush having a head and neck detachably connectable to a rocket ship-shaped handle in accordance with an embodiment of the present invention;

Fig. 2 is a left side elevational view of the toothbrush shown in Fig. 1, partially broken away to show the details of the detachable head and neck;

Fig. 3 is a bottom plan view of the toothbrush shown in Figs. 1 and 2;

Fig. 4 is a perspective view of the detachable head and neck of the toothbrush shown in Figs. 1-3;

Fig. 5 is a bottom plan view of the detachable head and neck shown in Fig. 4;

Fig. 6 is a top plan view of the toothbrush handle shown in Figs. 1-3;

Fig. 7 is a fragmental, elevational view of the toothbrush shown in Figs. 1-3, partially broken away to show the head and neck being removed from the handle;

Fig. 8 is a front elevational view of a toothbrush having a head and a rocket ship-shaped handle having a compartment for storing a figurine stationary therein in accordance with an embodiment of the present invention;

Fig. 9 is a right side elevational view of the toothbrush shown in Fig. 8;

5 Fig. 10 is a rear elevational view of the toothbrush shown in Figs. 8 and 9;

Fig. 11 is a top plan view of the toothbrush shown in Figs. 8-10;

Fig. 12 is a bottom plan view of the toothbrush shown in Figs. 8-11;

Fig. 13 is a front elevational view of the toothbrush shown in Figs. 8-12, partially broken away to show how the figurine is retained in the hollow toothbrush handle;

10 Fig. 14 is an exploded front fragmental view in elevation of the toothbrush handle shown in Figs. 8-13, showing the details of locking elements to attach the upper and lower sections of the toothbrush handle;

Fig. 15 is a right side elevational view of Fig. 14; and

15 Fig. 16 is a front fragmental cross-sectional view in elevation of the toothbrush handle shown in Figs. 8-15, and showing the interconnected upper and lower sections of the toothbrush handle.

### **DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION**

The following detailed description of the invention refers to the accompanying  
20 drawings. The same reference numbers in different drawings identify the same or similar elements. Also, the following detailed description does not limit the invention. Instead, the scope of the invention is defined by the appended claims and equivalents thereof.

Figs. 1-7 illustrate one practice of the present invention wherein a toothbrush 10 includes a neck section 12 interposed between a head 14 and a handheld handle 16.  
25 Preferably, neck 12 and head 14 are integrally connected, and together are detachably

connected to handle 16 so that head 14 may be replaced as the bristles 18 become worn and so that handle 16 may function separately as a toy when detached from neck 12 and head 14.

As best shown in Figs. 1 and 2, handle 16 may be in the shape of a rocket ship and include a hollowed-out compartment with a cover, window, or lid for retaining a figurine, such as an action figure. However, instead of a rocket ship shape, handle 16 may be in the shape of a vehicle, such as a submarine, car, plane or other toy that appeals to a child. Since the embodiment of the handle 16 shown in Figs. 1-7 is shaped like a rocket ship, it preferably includes a rocket-shaped body 20 with fins 22 provided at a lower portion of body 20 which simulate rocket ship fins, but also act as support feet for holding toothbrush 10 in an upright position for easy storage or display. An indicia band 24 may additionally be provided at a middle portion of body 20 for displaying a toy logo. A top portion of handle body 20 includes a recessed portion 26 and a socket 28 for receiving a portion of neck 12, as described more fully below. As best shown in Figs. 6 and 7, an aperture 30 extends through recessed portion 26 to receive a portion of neck 12, as also described more fully below.

As further shown in Figs. 1-7, a lower portion of neck 12 includes a collar 32, a push button 36 integrally connected to a spring arm 34, and a U-shaped insert 38 having a recess 40. Recess 40 of U-shaped insert 40 permits flexing of spring arm 34, but also protects spring arm 40 from over-flexing and potentially breaking. Preferably, all portions of neck 12, including collar 32, spring arm 34, push button 36, and U-shaped insert 38, are integrally formed together, and may be molded from a variety of rigid materials, including plastics, resins, etc., such as, for example, polypropylene.

U-shaped insert 38 is preferably sized to fit within and have the same shape as socket 28 of handle 16. However, U-shaped insert 38 and socket 28 may take on a variety of shapes other than those shown in Figs. 1-7, including channel, square, circular, rectangular, etc.

Neck 12 and head 14 may be removably attached to handle 16 by depressing push

button 36 and spring arm 34 towards recess 40 of U-shaped insert 38 with a finger or thumb (as shown by directional arrow 42 in Fig. 1), and sliding U-shaped insert 38 and the button 36/spring arm 34 combination into socket 28 provided in body 20 of handle 16. When push button 36 reaches aperture 30, push button 36 moves outwardly through recess aperture 30 provided in body 20 and remains in aperture 30 due to the spring force provided by spring arm 34, to couple handle 16 and neck 12 together. Neck 12 and head 14 may be removed from handle 16 by simply depressing push button 36 with a finger or thumb, and pulling neck 12 and head 14 away from handle 16 (as shown by directional arrow 44 in Fig. 7). The ease with which neck 12 and toy-shaped handle 16 may be connected and disconnected makes toothbrush 10 ideal for children. Children can easily manipulate push button 36 when they desire to play with handle 16 as a separate toy, and can easily connect neck 12 and head 14 when it is time to brush their teeth.

Head 14 of the present invention may have a generally flat face that holds a plurality of tufts or bristles 18. Head 14 may have variety of shapes, including but not limited to circular, oval, square, rectangular, various regular or irregular shapes, etc.

Bristles 18 may be coplanar with each other so that the outer surface of bristles 18 lie in a single plane. The invention, however, could be practiced where some or all of the bristles 18 extend outwardly a different distance than other bristles 18 to result in a stepped effect for the outer surface of bristles. In the illustrated embodiment as best shown in Fig. 2, bristles 18 extend outwardly from an outer surface of head 14 approximately the same distance to create a generally flat surface or flat bristle trim for receiving the toothpaste.

While conventional fiber form bristles are illustrated, the term "bristles" as used herein is intended to be used in a generic sense as cleaning elements or massage elements and could include, for example, elastomeric fingers or walls arranged in a circular cross-section shape or any type of desired shape, including straight portions or sinusoidal portions.

The bristles 18 could be mounted to the tuft blocks or sections by extending through suitable openings in the face of head 14 so that the base of bristles 18 is mounted within or below the surface of the face using conventional staple or in-mold tufting technology for mounting therein. If desired, the bristles could be embedded in an elastomeric material which would permit the bristles to have an independent motion. Such various forms of bristles may thus be used for the bristles used in any section of head 14.

It is to be understood that the specific illustration of the bristles is merely for exemplary purposes. The invention can, however, be practiced with various combinations of the same or different bristle configurations as disclosed in U.S. Patent Nos. 5,609,890, 5,390,984, and 5,533,791, the disclosures of which being incorporated by reference herein in their entirety, and/or with the same or different bristle materials, such as nylon bristles, spiral bristles, rubber bristles, etc. Similarly, while the bristles are illustrated to be generally perpendicular to the face of head 14, some or all of the bristles may be angled at various angles with respect to the outer surface of the bristle head. It is thereby possible to select the combination of bristle configurations, bristle materials and bristle orientations to achieve specific intended results, such as to create as much movement from the oscillating tuft heads to deliver additional oral health benefits like enhanced cleaning, tooth polishing, tooth whitening and/or massaging of the gums.

It is to be understood that the invention can be practiced by locating tufts of bristles in any otherwise open area of toothbrush head 14. Such tufts of bristles could be fixed bristles perpendicularly mounted or mounted at an angle to the exposed outer surface of head 14 or could be bristles mounted on an elastomeric base with a Shore A durometer in the range of about zero to about ninety, so as to be independently movable when pressure is applied. Such bristles in their normal condition could be either perpendicular or at an angle to the face of head 14.

The invention may also be practiced where different sets of bristles have different colors. It is to be understood, however, that any combination of colors including only one color could be used for bristles 18. Likewise, neck 12, head 14, and handle 16 may have a variety of colors, and may be opaque, transparent, translucent, clear, etc.

5 Although Figs. 1-7 illustrate a manually-operated toothbrush, the present invention may also be practiced where the head includes one or more power or electrically operated movable sections carrying cleaning elements. Such a movable section may oscillate in a rotational manner or may oscillate linearly in a longitudinal direction with respect to the longitudinal axis of the head or may oscillate linearly in a lateral or transverse direction with  
10 respect to the longitudinal axis of the head. The movable section may oscillate in and out in a direction toward and away from the outer surface of the head. The movable section may rock back and forth with respect to the outer surface of the head. The movable section may rotate continuously in the same direction, rather than oscillate. Any suitable drive mechanism may be used for imparting the desired motion to the movable section. Where plural movable  
15 sections are used, all of the movable sections may have the same type and direction of movement, or combinations of different movements may be used.

Similarly, handle 16 may be a power or electrically operated movable toy rather than a manually-operated toy as shown in Figs. 1-7. The power-operated handle may function alone as a movable toy or double as a movable toy and a mechanism to provide one or more power  
20 or electrically operated movable sections carrying cleaning elements in head 14.

Figs. 8-16 illustrate another practice of the present invention wherein a toothbrush 110 includes a neck section 112 interposed between a head 114 and a handheld handle 116. Preferably, neck 112 and head 114 are integrally connected, and together are detachably connected to handle 116 so that head 114 may be replaced as the bristles become worn and so  
25 that handle 116 may function separately as a toy when detached from neck 112 and head 114.

In an alternate, less costly embodiment of the present invention, the head 114 and neck 112 are integral and permanently connected to the handle 116.

As further shown in Figs. 8-16, handle 116 preferably includes two separate sections, an upper section 118 and a lower section 120, that form a hollowed-out compartment 122 for retaining a figurine 124, such as an LEGO® action figurine. However, it is understood that in place of the figurine 124 may be a vehicle, such as a submarine, plane or other toy or sundry product, such as candy or a miniature toothpaste tube which will appeal to a child. Although handle 116 is shown in the shape of a rocket ship, handle 116 may be in the shape of a vehicle, such as a submarine, car, plane or other toy that appeals to a child. Furthermore, the handle of the present invention need not be shaped like a toy, but rather may be configured as a conventional generally cylindrical toothbrush handle to act as display case for figurine 124 contained therein.

An indicia band 126 may additionally be provided for displaying a toy logo or manufacturer information. Since the embodiment of the handle 116 shown in Figs. 8-16 is shaped like a rocket ship, it preferably includes fins 128 which simulate rocket ship fins, but also act as support feet for holding toothbrush 110 in an upright position for easy storage or display.

In the embodiment shown in Figs. 8-16, handle 116 includes two separate sections, upper section 118 and lower section 120, which are connectable via a pair of spring arms 130 having detents 132 located at and extending outwardly from the tip of each spring arm 130 formed on lower section 120, and a pair of recess slots 134 formed on upper section 118. When upper section 118 and lower section 120 are disconnected, figurine 124 may be removed from or inserted into compartment 122 of handle 116.

Detents 132 are preferably sized to fit within and have the same shape as recess slots 134 of upper section 118. However, detents 132 and recess slots 134 may take on a variety of

shapes other than those shown in Figs. 8-16, including channel, square, circular, rectangular, etc.

Upper section 118 and lower section 120 of handle 116 may be removably attached by pushing the two sections 118, 120 together, and sliding recess slots 134 and the detent 5 132/spring arm 130 combination towards each other. When detents 132 reach recess slots 134, detents 132 moves outwardly into recess slots 134 provided in upper section 118 and remain in recess slots 134 due to the spring force provided by spring arms 130, to couple upper section 118 and lower section 120 together. Upper section 118 and lower section 120 of handle 116 may be disconnected by simply pulling upper section 118 away from lower 10 section 120 with enough force to overcome the spring force provided by spring arms 130. Figs. 14-16 best show how upper section 118 connects with lower section 120, with Figs. 14 and 15 showing the two sections 118, 120 in their disconnected positions, and Fig. 16 showing the two sections 118, 120 in their connected positions.

The ease with which upper section 118 and lower section 120 of handle 116 may be 15 connected and disconnected makes toothbrush 110 ideal for children. Children can easily manipulate upper section 118 and lower section 120 when they desire to play with figurine 124 as a separate toy, and can easily connect upper section 118 and lower section 120 when it is time to brush their teeth or to display and/or store figurine 124 within handle 116.

Figs. 11-13 best show the configuration for retaining figurine 124 in a stationary 20 position within hollow compartment 122. Four lower vertical ribs 136 are provided in lower section 120 of handle, and are arranged to contact the legs of figurine 124, as best shown in Fig. 13. Lower ribs 124 are arranged to retain and prevent figurine 124 from moving within compartment 122, but do not engage the legs of figurine 124 so tightly that figurine 124 cannot be removed easily by a child. Figurine 124 is further retained in compartment 122 by 25 contact points 140 between the figurine 124 (e.g., the elbows and hands of figurine 124) and



upper and lower sections 118, 120, as best shown in Fig. 13. Four upper vertical ribs 138 may also be provided to reinforce upper section 118, and may be configured to further retain figurine 124, although Figs. 8-16 show upper ribs 138 not in contact with figurine 124.

Although Figs. 8-16 show one configuration for securing figurine 124 within compartment 122, the present invention is not limited solely to this configuration. For example, the existence, size, number, and arrangement of lower ribs 136 will depend upon the size and shape of handle 116 as well as the size and shape of figurine 124. The location of the contact points 140 will likewise depend upon the size and shape of handle 116 and figurine 124.

Head 114 of the present invention may have a generally flat face that holds a plurality of tufts or bristles 100. Head 114 may have variety of shapes, including but not limited to circular, oval, square, rectangular, various regular or irregular shapes, etc.

Bristles 100 may be made from the same materials discussed previously for bristles 18. Bristles 100 may also be mounted to head 114 in the same manner bristles 18 are mounted to head 14. Furthermore, bristles 100 may also have the same configurations or arrangements discussed previously for bristles 18.

Although Figs. 8-16 illustrate a manually-operated toothbrush, the present invention may also be practiced where the head includes one or more power or electrically operated movable sections carrying cleaning elements. Such a movable section may oscillate in a rotational manner or may oscillate linearly in a longitudinal direction with respect to the longitudinal axis of the head or may oscillate linearly in a lateral or transverse direction with respect to the longitudinal axis of the head. The movable section may oscillate in and out in a direction toward and away from the outer surface of the head. The movable section may rock back and forth with respect to the outer surface of the head. The movable section may rotate continuously in the same direction, rather than oscillate. Any suitable drive mechanism may

be used for imparting the desired motion to the movable section. Where plural movable sections are used, all of the movable sections may have the same type and direction of movement, or combinations of different movements may be used.

Similarly, handle 116 may be a power or electrically operated movable toy rather than  
5 a manually-operated toy as shown in Figs. 8-16. The power-operated handle may function alone as a movable toy or double as a movable toy and a mechanism to provide one or more power or electrically operated movable sections carrying cleaning elements in head 114.

Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended  
10 that the specification and examples be considered as exemplary only, with a true scope and spirit of the invention being indicated by the following claims.

**WHAT IS CLAIMED IS:**

1. A toothbrush assembly, comprising:

a head connected to one end of a neck, said head having a plurality of bristles extending outwardly therefrom, another end of said neck having a push button integrally connected to a spring arm extending outwardly from said neck; and

a toy-shaped handle having an aperture, the push button and spring arm removably connecting to the aperture to connect said neck to said toy-shaped handle.

2. A toothbrush assembly as recited in claim 1, wherein the push button is located at and extends outwardly from a tip of the spring arm.

3. A toothbrush assembly as recited in claim 1, wherein said toy-shaped handle is in the shape of a rocket ship.

4. A toothbrush assembly as recited in claim 3, wherein said rocket ship-shaped handle has a plurality of fins extending from a bottom portion thereof which simulate rocket ship fins and act as support feet for holding the toothbrush assembly in an upright position.

5. A toothbrush assembly as recited in claim 1, wherein said handle includes a socket communicating with the aperture, and another end of said neck includes an insert extending outwardly therefrom, the insert having the same size and shape as the socket for receipt within the socket.

6. A toothbrush assembly as recited in claim 5, wherein the insert is U-shaped and includes a recess to permit flexing and prevent over-flexing of the spring arm.

7. A toothbrush assembly as recited in claim 6, wherein the spring arm is located at the top of the U-shaped insert.

8. A toothbrush assembly as recited in claim 6, wherein the U-shaped insert, the spring arm, and the push button are integrally formed with said neck and are made of a rigid material.

9. A toothbrush assembly as recited in claim 1, wherein the push button extends  
5 through and remains in the aperture due to a spring force provided by the spring arm.

10. A toothbrush assembly as recited in claim 1, wherein said handle includes a recessed portion through which the aperture extends.

11. A toothbrush assembly as recited in claim 1, wherein when said handle and said neck are connected together, the push button moves outwardly through the aperture to  
10 couple said handle to said neck.

12. A toothbrush assembly as recited in claim 1, wherein said neck may be removed from said handle by moving push button inwardly through the aperture, and pulling said neck away from said handle.

13. A toothbrush assembly as recited in claim 1, wherein the push button may be  
15 manipulated by one of a thumb or a finger.

14. A toothbrush assembly, comprising:  
a head connected to a neck, said head having a plurality of bristles extending outwardly therefrom;  
a handle connected to said neck, said handle having a compartment provided  
20 therein; and  
a figurine being provided and held stationary in the compartment.

15. A toothbrush assembly as recited in claim 14, wherein said handle comprises two sections which may be connected and disconnected whereby said figurine may be removed and replaced in the compartment.

25 16. A toothbrush assembly as recited in claim 14, wherein said handle is in the

shape of a rocket ship.

17. A toothbrush assembly as recited in claim 16, wherein said rocket ship-shaped handle has a plurality of fins extending from a bottom portion thereof which simulate rocket ship fins and act as support feet for holding the toothbrush assembly in an upright position.

5 18. A toothbrush assembly as recited in claim 14, wherein said handle is in the shape of a display case.

19. A toothbrush assembly as recited in claim 15, wherein the first section of said handle includes a detent integrally connected to a spring arm extending outwardly from the first section, and the second section includes a recess slot for receiving the detent and  
10 connecting the first and second sections together.

20. A toothbrush assembly as recited in claim 19, wherein the detent has the same size and shape as the recess slot.

21. A toothbrush assembly as recited in claim 19, wherein the detent extends into the recess slot and remains in the recess slot due to a spring force provided by the spring arm.

15 22. A toothbrush assembly as recited in claim 14, wherein a portion of said handle is transparent to make at least a portion of said figurine visible within the compartment of said handle.

23. A toothbrush assembly as recited in claim 15, wherein the two sections are transparent to make said figurine visible within the compartment of said handle.

20 24. A toothbrush assembly as recited in claim 14, wherein said handle further comprises an indicia band.

25. A toothbrush assembly as recited in claim 14, wherein said neck removable connects with said handle.

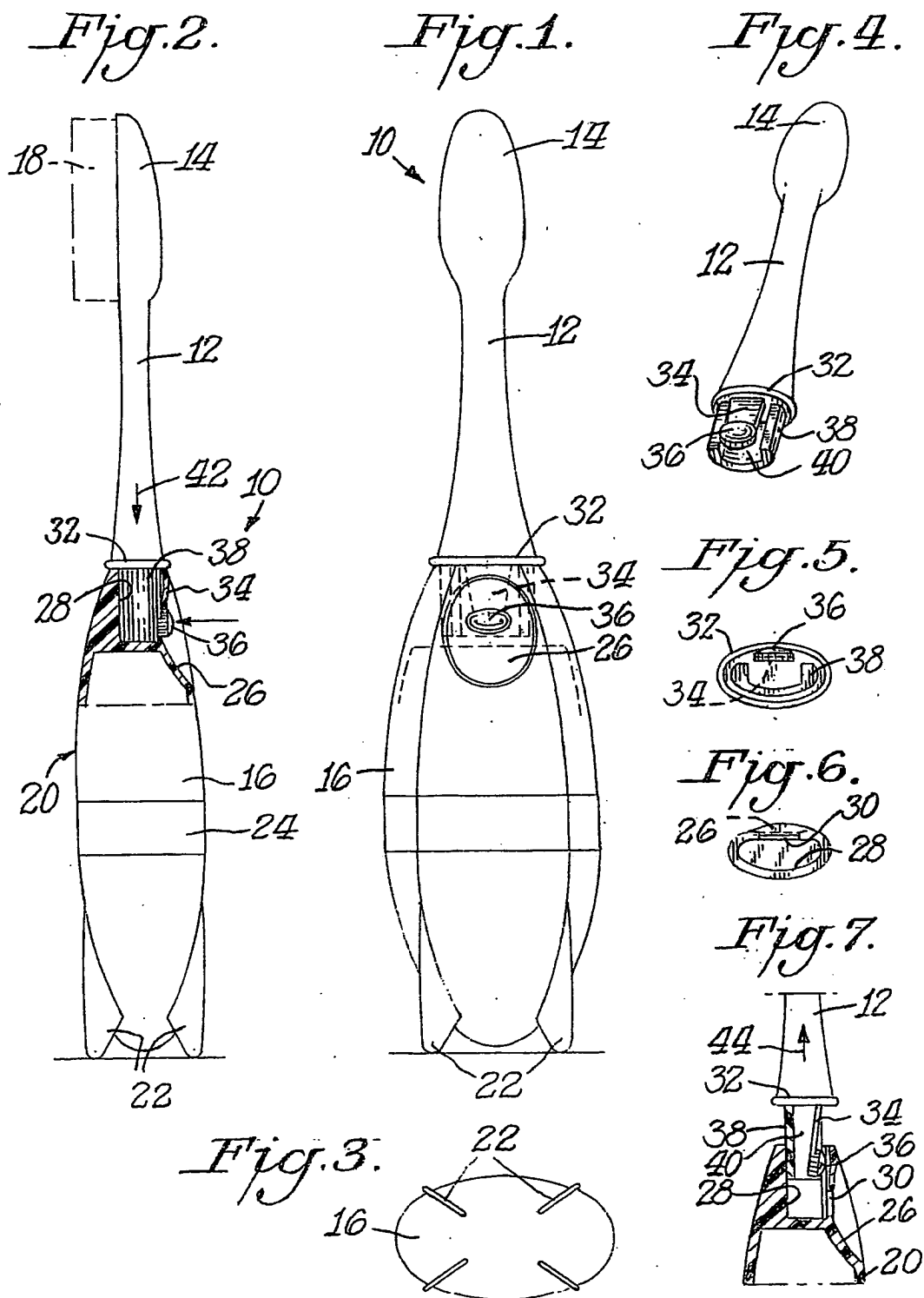
26. A toothbrush assembly as recited in claim 14, wherein said neck integrally  
25 connects with said handle.

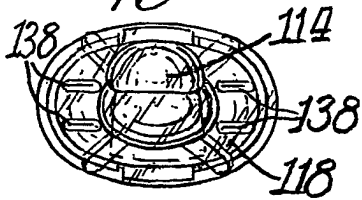
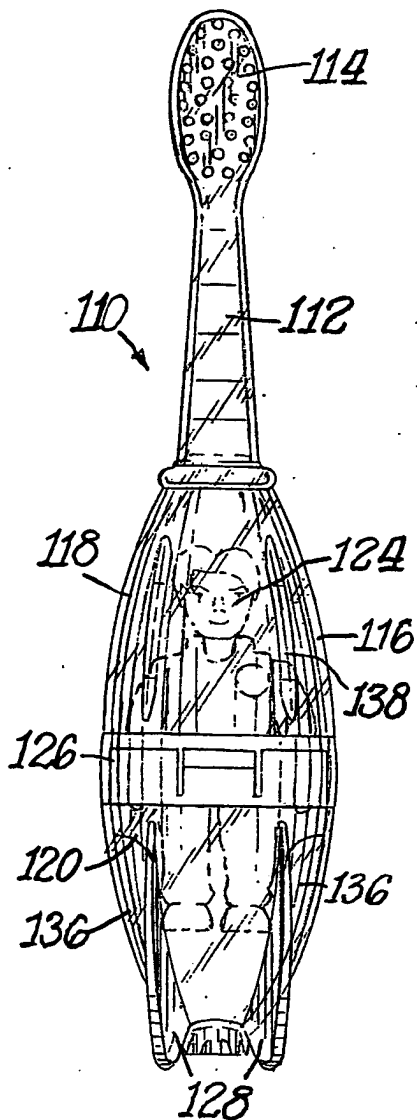
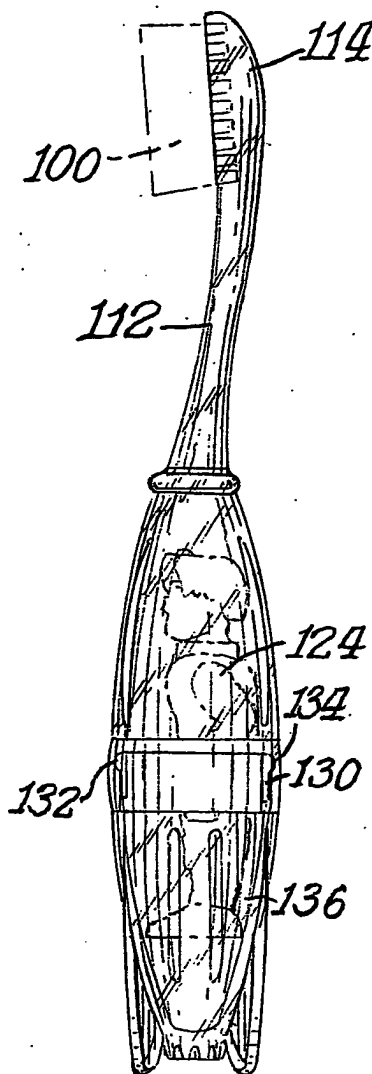
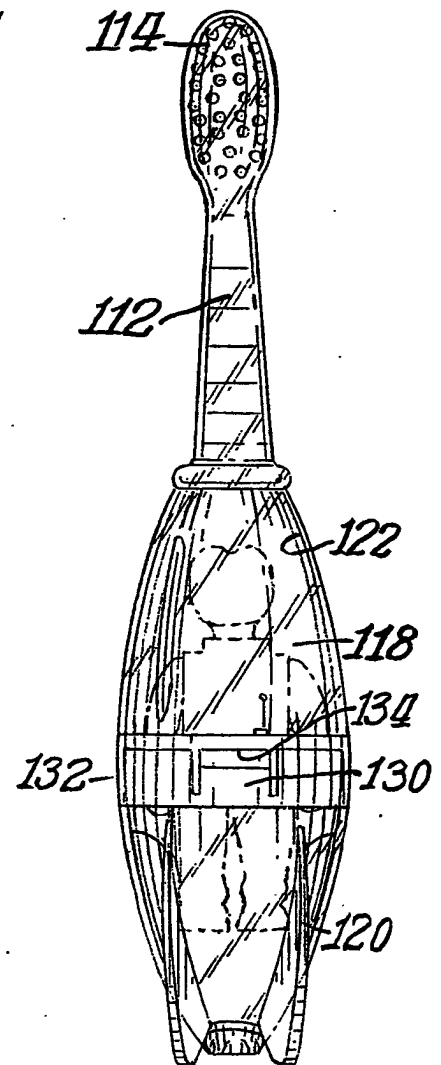
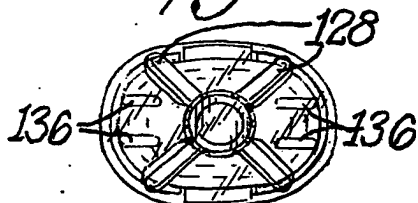
27. A toothbrush assembly as recited in claim 14, wherein said handle further includes at least one rib extending into the compartment for retaining said figurine stationary in the compartment.

28. A toothbrush assembly as recited in claim 27, wherein portions of said handle  
5 contact said figurine to further retain said figurine stationary in the compartment.

29. A toothbrush assembly as recited in claim 14, wherein said handle further includes four vertical ribs extending into the compartment for retaining said figurine stationary in the compartment.

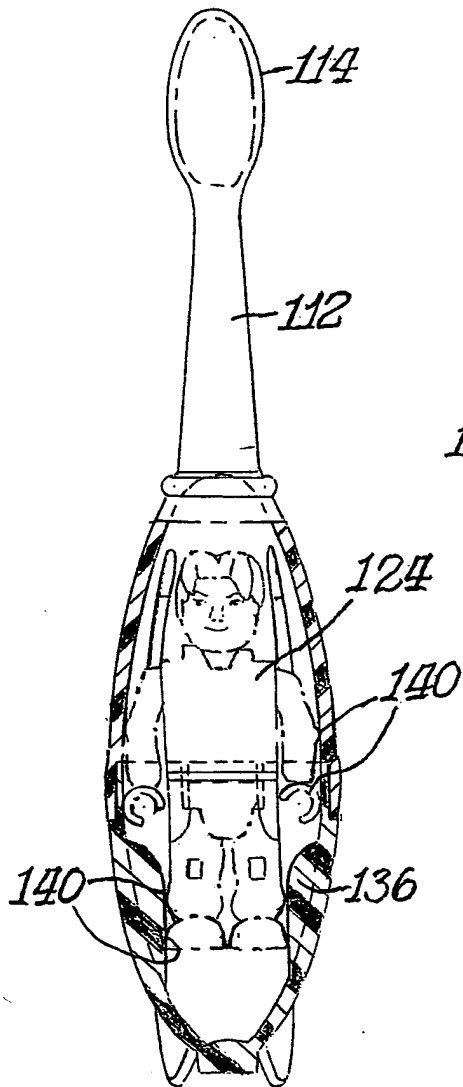
30. A toothbrush assembly as recited in claim 29, wherein portions of said handle  
10 contact said figurine to further retain said figurine stationary in the compartment.



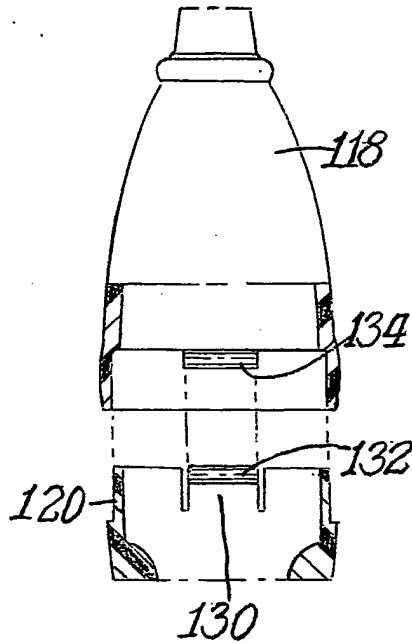
*Fig. 11.**Fig. 8.**Fig. 9.**Fig. 10.**Fig. 12.*



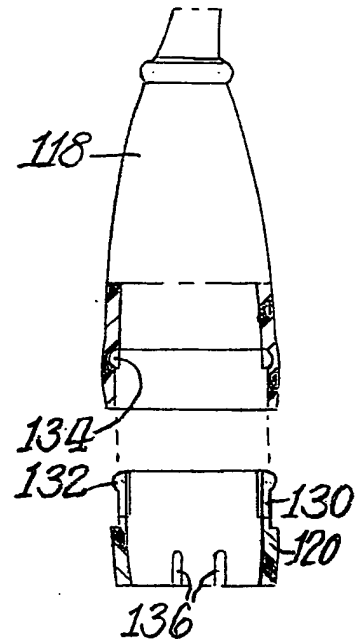
*Fig. 13.*



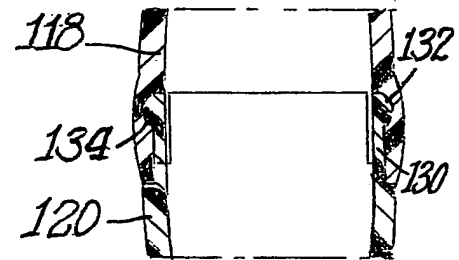
*Fig. 14.*



*Fig. 15.*



*Fig. 16.*





(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
8 April 2004 (08.04.2004)

PCT

(10) International Publication Number  
**WO 2004/028291 A3**

(51) International Patent Classification<sup>7</sup>: **A46B 5/00**, 15/00

(21) International Application Number:  
PCT/US2003/030168

(22) International Filing Date:  
23 September 2003 (23.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/413,128 24 September 2002 (24.09.2002) US

(71) Applicant: **COLGATE-PALMOLIVE COMPANY**  
[US/US]; 300 Park Avenue, New York, NY 10022 (US).

(72) Inventors: **KEMP, James**; 14 Staudt Court, Somerset, NJ  
08873 (US). **SPROSTA, Al**; 1004 Redspire Drive, Union,

NJ 07083 (US). **TRAFICANT, Brett**; 28 Coldevin Road,  
Clark, NJ 07066 (US). **DAI, Tau**; 45 Foley Avenue, Edison,  
NJ 08820 (US). **JIMENEZ, Eduardo**; 21 Manor Drive,  
Manalapan, NJ 07726 (US). **PAK, Nancy, Won, Mee**; 215  
West 84th Street #424, New York, NY 10024 (US).

(74) Agent: **GOLDFINE, Henry, S.**; Colgate-Palmolive  
Company, 909 River Road, P.O. Box 1343, Piscataway, NJ  
08855-1343 (US).

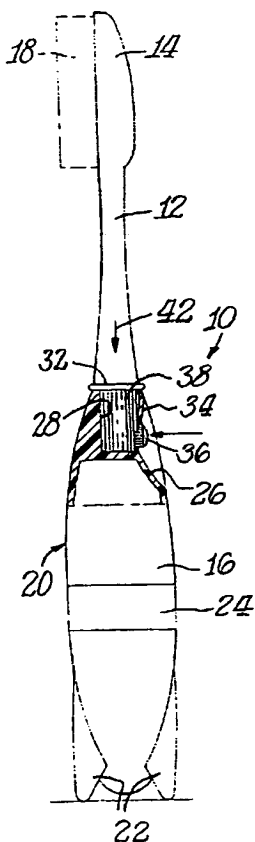
(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: TOOTHBRUSH ASSEMBLY

(57) Abstract: A child's toothbrush includes a handle in the form of a toy, such as a rocket ship or a vehicle, and wherein a toothbrush head and neck easily connects and disconnects from the handle. The handle may also contain a hollow compartment for holding stationary a removable vehicle, figurine, other toy or sundry product therein.



WO 2004/028291 A3



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *with international search report*

**(88) Date of publication of the international search report:**

14 October 2004

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/30168

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A46B5/00 A46B15/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A46B A45B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 774 921 A (HARRISON SUSAN ET AL) 7 July 1998 (1998-07-07) the whole document	1,2,5
Y		3,4
Y	GB 809 385 A (RICHARD DEREK LAMPORT) 25 February 1959 (1959-02-25) the whole document	3,4
E	US 2003/183242 A1 (PAK NANCY WON MEE ET AL) 2 October 2003 (2003-10-02) the whole document	14, 16-18, 22,24-26
Y	WO 01/87112 A (PONZINI SPA ;PONZINI ELIGIO (IT)) 22 November 2001 (2001-11-22) the whole document	1,2,5
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

26 March 2004

Date of mailing of the international search report

19 APR 2004

Name and mailing address of the ISA  
European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Neiller, F

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/30168

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 015 328 A (GLASER ROBERT) 18 January 2000 (2000-01-18) the whole document	1,2,5
A	----- US 5 590 436 A (WRIGHT JOHN R. ET AL) 7 January 1997 (1997-01-07) the whole document -----	14-30

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 03/30168

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13

Toothbrush with a head connected to a neck, said neck having a push button fixed to a spring arm for removably connecting to the aperture of a handle.

---

2. claims: 14-30

Toothbrush with a handle having a compartment containing a figurine.

---



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/30168

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5774921	A	07-07-1998	US 6141815 A	07-11-2000
			US 2002112302 A1	22-08-2002
			US 6363568 B1	02-04-2002
			AU 3145193 A	28-06-1993
			WO 9310688 A1	10-06-1993
<hr/>				
GB 809385	A	25-02-1959	NONE	
<hr/>				
US 2003183242	A1	02-10-2003	US 2003183241 A1	02-10-2003
			WO 03084363 A1	16-10-2003
<hr/>				
WO 0187112	A	22-11-2001	IT MI20001099 A1	19-11-2001
			AU 7436101 A	26-11-2001
			EP 1075806 A1	14-02-2001
			EP 1284618 A1	26-02-2003
			WO 0187112 A1	22-11-2001
			US 2003115706 A1	26-06-2003
<hr/>				
US 6015328	A	18-01-2000	NONE	
<hr/>				
US 5590436	A	07-01-1997	GB 2299499 A	09-10-1996
			EP 0818966 A1	21-01-1998
			WO 9631145 A1	10-10-1996
<hr/>				

**THIS PAGE BLANK (USPTO)**